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# IMPACT OF EARNED INCOME TAX CREDIT:

## A SIMULATION OF TAX YEAR 1976

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Abstract

According to this simulation analysis of the 1976 tax year, families residing in the South would receive over 43 percent of benefits from the earned income tax credit, a refundable tax credit enacted into law as part of the Tax Reduction Act of 1975. It was assumed in the simulation that the tax credit would be in effect throughout the 1976 tax year. About 34 percent would go to families in rural areas and almost 7 percent to farm families. About 18 percent of the benefits would accrue to families with incomes under \$4,000, 56 percent to families with incomes between \$4,000 and \$8,000, and the rest to families with incomes over \$8,000.

Key words: Earned income tax credit, Federal income tax, Nonmetro families, Rural families, Farm families.

Acknowledgments

The Urban Institute developed the data for this study from their Transfer Income Model (TRIM) at the request of the Economic Research Service. Gary Hendricks, Urban Institute, supervised the TRIM work and made many helpful suggestions for the analysis. George Chow was primarily responsible for implementing the TRIM simulations.

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# IMPACT OF THE EARNED INCOME TAX CREDIT: A SIMULATION OF TAX YEAR 1976

Thomas A. Carlin

## Introduction

The first income maintenance program designed to solely aid the working poor was enacted into law as part of the Tax Reduction Act of 1975. The refundable earned income credit was one of four major actions designed primarily to increase the disposable income of individuals. 1/ At the time the law was enacted, the earned income credit was estimated to provide \$1.5 billion of direct tax relief or cash payments to certain taxpayers with low earnings (2)\*.

Analysis of the distribution of benefits from the earned income tax credit provides a means of determining whether the tax provision potentially reaches its intended population. Therefore, this study explores the distribution of benefits by residence, geographic area, and income level. The study employs a simulation analysis which assumed that the tax credit would be in effect for the entire 1976 tax year. At the time of the study, the tax credit had actually been authorized for only the first half of that year.

## The Earned Income Credit

The basic ideas underlying the earned income credit have generic origins with the Senate Finance Committee's proposed Welfare Reform Bill of 1972 (1). In this bill, an earnings bonus of 10 percent was proposed for certain family

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\* Underscored numerals in parentheses refer to references on page 11.

1/ Besides the refund on 1974 individual income taxes, the Tax Reduction Act of 1975 increased the low-income allowance, increased the percentage standard deduction, instituted a tax credit for personal exemptions, and provided a refundable credit for certain earned income. Although individuals were also allowed a credit for the purchase of a newly constructed principal residence, this provision was designed to stimulate the depressed housing industry rather than increase disposable income as such.

heads with earnings up to \$4,000. Beyond that level, each dollar increase in earnings reduced the earnings bonus by 25 cents. Thus, the earnings bonus would phase out at \$5,600.

The Senate Finance Committee's proposal never became law but received considerable attention during the welfare reform debates in the 92nd Congress. In March 1975, the Senate did enact such a provision but in the context of a tax program rather than welfare reform legislation. <sup>2/</sup> Although the original 1975 legislation provided for an earned income credit only for tax year 1975, the credit was recently extended into the first half of 1976 as part of the Revenue Adjustment Act of 1975.

Under the earned income credit, an individual who maintains a household <sup>3/</sup> in the United States for himself and a child for whom he can claim a deduction is eligible for a tax credit of 10 percent for the first \$4,000 of taxable earned income (wages, salaries, tips, other employee compensation, and self-employment income). In the case of a married individual, the earned income credit can be claimed only if a joint return is filed for the taxable year. For each dollar of adjusted gross income in excess of \$4,000, the tax credit is reduced by 10 cents. Thus, no individual with an adjusted gross income in excess of \$8,000 would benefit from the tax credit.

The earned income credit differs from other tax credits currently available to individuals. The value of the earned income credit is not limited solely to the amount of income tax liability. The taxpayer receives a direct payment in situations where the earned income credit exceeds income tax liability. However, this payment is limited to the amount of the excess or unused credit. For example, if an individual's Federal income tax liability was \$110 and he was eligible to claim \$150 as an earned income tax credit, then he would receive a direct payment of \$40.

### Phases of the Subsidy

The impact of the earned income credit on the disposable income of a hypothetical family of four with only earned income is shown in table 1. Two phases, denoted as "pure subsidy" and "taxed subsidy," are involved in this provision. Under the pure subsidy phase, the full impact of the earned income credit is in force. A \$1 increase in earned income generates \$1.10 in disposable income. Under the taxed subsidy phase, the size of the subsidy is reduced as earnings increase.

The taxed subsidy acts as a marginal tax on earned income. This marginal tax is necessary under the plan in order to reduce benefit levels as adjusted gross income increases above \$4,000. For example, when family earnings increase \$1,000, from \$6,000 to \$7,000 in table 1, disposable income increases

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<sup>2/</sup> For a discussion of the earnings bonus in the context of an income maintenance system, see (4).

<sup>3/</sup> The individual must provide more than half the cost of maintaining the household.

\$849 under the 1974 law. With the earned income credit, disposable income increases by \$749. Thus, the introduction of the earned income credit increases the implicit marginal tax rate on earned income from approximately 15 percent to about 25 percent. One characteristic of this type of subsidy program is that the implicit tax rate is higher (in fact, 10 percentage points higher) under the program than with the existing tax system. <sup>4/</sup> However, after-tax income of eligible participants will always be higher with the refundable tax credit.

The effect of the earned income credit on the implicit marginal tax rate during the taxed subsidy phase is important. The higher the implicit marginal tax rate, the lower the disposable income from additional work. This could potentially affect work incentives. For example, suppose it was decided to increase the earned income credit to 25 percent of earned income. This would require reducing the credit by 25 cents--rather than 10 cents--for each dollar

Table 1--Disposable income with and without the earned income credit for a family of four with only earned income participating in no transfer programs

Earned income	: Disposable income without credit <sup>1/</sup>	: Disposable income with credit	: Change in disposable income
	<u>Dollars</u>		
3,000	3,000	3,300	300
4,000	4,000	4,400	400
5,000	5,000	5,390	390
5,500	5,500	5,750	250
6,000	5,965	6,165	200
6,500	6,390	6,540	150
7,000	6,814	6,914	100
7,500	7,234	7,284	50
8,000	7,653	7,653	--

<sup>1/</sup> Tax Rate Schedule Y for married taxpayers filing joint returns was used to calculate income tax liability. The family was assumed to have no other source of income. The family was assumed to use the low-income allowance (\$1,900) or standard deduction, personal exemptions of \$750 per person, and the \$30 personal tax credit.

<sup>4/</sup> The implicit marginal tax rate may be even higher if the individual participates in several income-conditioned welfare programs. This would occur if the additional income from the earned income credit reduces the benefit levels or makes the individual temporarily ineligible for program participation.

increase in adjusted gross income above \$4,000. The implicit marginal tax rate for eligible taxpayers during the taxed subsidy phase would then be 25 instead of 10 percentage points higher. Thus, the marginal tax rate problem limits the extent to which the earned income credit can be used to increase the incomes of the working poor.

### Data and Procedures

The Urban Institute's Transfer Income Model (TRIM) was used to estimate the distributional impact of the earned income credit. TRIM is a computer simulation model using household survey data as input. Data include economic and demographic information on individual households, families, and persons in each family. Program rules are then applied to the data, and program benefits (in this application, tax liabilities) are calculated for each family. Benefits are then added to the household survey data file and tabulations made of benefits by selected characteristics. <sup>5/</sup>

The input data file used for this analysis was the March 1973 Current Population Survey (CPS) conducted by the Bureau of the Census. Simulation year for the study was 1976. TRIM aged the 1973 data by reweighting the data to reflect known and projected changes in the population characteristics and by adjusting for growth in income by source.

Several assumptions were required in order to carry out the analysis. The first set of assumptions relate to the performance of the national economy for 1975 and 1976. It was assumed that prices would increase by 9.21 percent in 1975 and 6.14 percent in 1976. Similarly, it was assumed that the unemployment rate would be 7.2 percent in 1976. Both the inflation rate and unemployment level are slightly below the January projections for 1976 (3). Given the uncertainties concerning economic activity during 1976, the direction of bias introduced by these assumptions is uncertain although expected to be downward, based on the January 1976 forecasts.

The CPS data are not specifically intended to be used to calculate a family's Federal income tax liability. Thus, a number of simplifying assumptions had to be made which may affect the magnitude of the estimates. First, it was assumed that all husband-wife families filed a joint return. <sup>6/</sup> Second, it was assumed that all subfamilies who did not pass a strict support test would file a separate tax return from the primary family of which they

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<sup>5/</sup> A description of TRIM is included in the introduction to "The User's Guide," Urban Institute Working Paper 718:3, March 1973. Copies are available on request from the Urban Institute, 2100 M Street, N.W., Washington, D.C. 20037.

<sup>6/</sup> In 1973, husbands and wives filed about 46 million returns of which 95 percent were joint returns. Of the 12.5 million husband and wife returns with adjusted gross income under \$8,000, 86 percent were joint returns (9).



were a part. 7/ Third, it was assumed that no family had dependents that did not live in the household. While this last assumption is clearly not correct for families with college age children, it would probably have only a minor effect on estimates for a program targeted at the working poor. Finally, all unrelated individuals were assumed to file a single return. One-parent families were assumed to file head of household returns.

In all cases, the Federal income tax liability was first estimated using the 1974 tax law. Then the 1976 Federal income tax liability was simulated using the provisions of the Tax Reduction Act of 1975. Each provision of the 1975 act was incorporated into the simulation sequentially; thus, the change due to the earned income credit could be isolated from the total impact of the act. No attempt was made to modify the tax provisions to accommodate the Revenue Adjustment Act of 1975. The slight changes in that law would not substantially affect the distributions under consideration. Every eligible tax unit was assumed to file for the earned income credit.

The results of the simulations were tabulated using the family as the unit of analysis. A family is defined as all members of a household related by blood, marriage, or adoption. Thus, in households with subfamilies, both the subfamily and any benefits they derive from the earned income credit were included with the primary family and its benefits. Unrelated individuals were included as families of size one. 8/

### Results

Based on the simulation analysis, the South appeared to benefit more from the earned income credit than did any other region. While nearly 31 percent of all U.S. families reside in the South, that region would receive over 43 percent of the benefits (tables 2 and 3). Rural nonfarm and farm areas of the United States had almost 26 percent of the families but would receive nearly 34 percent of the program benefits based on the simulation.

The share ratio indicates that farm residents, especially outside the Northeast, would tend to receive a relatively higher proportion of total

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7/ A subfamily is a married couple or a parent with one or more own children living in a household and related to, but not including, the household head. In the simulation, members of a subfamily could not be claimed as dependents on the primary family head's Federal tax return if they were claimed as a dependent on the subfamily's tax return. If the subfamily could file a joint tax return but would have no income tax liability, then the subfamily member could be eligible as a dependent on the primary family head's tax return only if that member had an income below the per capita income of the primary family and a total income of \$750 or less.

8/ An unrelated individual is a person 14 years old or older who is not living with relatives. Unrelated individuals would not be eligible to use the earned income tax credit.

benefits (table 4). <sup>9/</sup> This is probably true because of two factors: the high incidence of earned income through self-employment and historically lower incomes. Despite the somewhat higher proportion of benefits for farmers, location in the South still appears to be the strongest factor, considered in this study, affecting the distribution of benefits. The earned income credit appeared to redistribute income to the South from all other urban areas and, within the southern region, rural areas would tend to be the greatest benefactors. However, southern urbanites also would receive proportionately more from the program than their population distribution would suggest.

Table 2--Estimated distribution of families, by residence and region, 1976

Region	Residence <u>1/</u>					Total
	Urban		Rural			
	Metro	Nonmetro	Nonfarm	Farm		
	areas	areas				
	<u>Percent</u>					
Northeast	17.0	2.1	4.3	0.2	23.6	
North Central	15.7	3.7	5.7	1.8	26.9	
South	15.2	5.1	9.0	1.5	30.8	
West	13.8	1.9	2.6	0.4	18.7	
Total	61.7	12.8	21.6	3.9	100.0	

<sup>1/</sup> Urban areas are incorporated places with more than 2,500 population. Urban areas are divided into two groups: those within Standard Metropolitan Statistical Areas (SMSA), considered large metropolitan centers, and those outside SMSA's. An SMSA is a county or group of contiguous counties which contain at least one city of 50,000 inhabitants or more, or twin cities with a combined population of at least 50,000. Rural residents reside outside urban areas. Rural farm residents reside on farms outside urban areas.

Source: Special tabulations from the Urban Institute's TRIM simulation.

<sup>9/</sup> The share ratio is the percent of aggregate benefits received by the group divided by the percent that group represents of total population. A share ratio of 1.00 indicates that aggregate benefits of the group are proportionate to its size.



Table 3--Estimated benefits resulting from the earned income credit, by residence and region, 1976

Region	Residence <u>1/</u>					Total
	Urban		Rural			
	Metro areas	Nonmetro areas	Nonfarm	Farm		
	:	:	:	:		
	<u>Percent</u>					
Northeast	12.1	1.6	3.3	0.2	17.2	
North Central	10.8	3.3	5.4	2.5	22.0	
South	17.7	7.0	15.2	3.6	43.5	
West	12.4	1.5	2.9	0.5	17.3	
Total	53.0	13.4	26.8	6.8	100.0	

1/ See table 2, footnote 1, for definition of residence.

Source: Special tabulations from the Urban Institute's TRIM simulation.

Table 4--Share ratio for earned income credit, by residence and region, 1976 1/

Region	Residence <u>2/</u>					Total
	Urban		Rural			
	Metro	Nonmetro	Nonfarm	Farm		
	areas	areas				
	<u>Ratio</u>					
Northeast	0.71	0.76	0.77	1.00	0.73	
North Central	0.69	0.89	0.95	1.39	0.82	
South	1.16	1.37	1.69	2.40	1.41	
West	0.90	0.79	1.12	1.25	0.93	
Total	0.86	1.05	1.24	1.74		

1/ See text, footnote 9, for definition of share ratio.

2/ See table 2, footnote 1, for definition of residence.

Rural areas, and the South in general, would be expected to benefit more from any program designed primarily to aid the working poor since these two types of areas tend to have a higher proportion of working poor in their low-income populations. For example, in 1974 poor, male family heads had a higher incidence of attachment to the civilian labor force, 60 percent compared to 36 percent for poor, female family heads (6). Over 52 percent of poor, male-headed family heads worked full-time compared to 25 percent for poor, female-headed families. Male-headed families constituted about 69 percent of all nonmetro families in poverty compared to 44 percent in metro areas. A similar situation exists for the South except that a higher proportion of southern poor families reside in nonmetro areas.

Families with incomes of less than \$4,000 would receive a little over 18 percent of the earned income credit benefits, only slightly more than their representative share of the population (table 5). This was true for all residential categories and for all regions except the Northeast. Families with incomes between \$4,000 and \$8,000 would realize the largest proportion of benefits, over 56 percent, more than three times their representative share of the population.

This simulated result reflects the fact that low-income families receive less of their money income from earnings (wages and self-employment income). Because the earned income credit was tied solely to wage or self-employment earnings, the higher income groups would be expected to have a larger share of total benefits. For example, in 1974 earnings accounted for only about 33 percent of the money income of families with total incomes less than \$4,000 (7). For families with total incomes between \$4,000 and \$7,999, earnings accounted for about 57 percent of money income. Families having incomes of \$8,000 or more reported that earnings accounted for slightly over 89 percent of total money income.

Because of the limit of \$8,000 in adjusted gross income for any eligible filing unit, one might hypothesize that few benefits would go to families with incomes above \$8,000. However, results of the simulation analysis show that over 25 percent of the benefits from the earned income credit would accrue to families with incomes in excess of \$8,000 (table 5). At least two factors account for this:

First, some components of money income, such as Social Security payments or sick pay, are not taxable. Thus, total money income could exceed \$8,000 while the family would still be eligible to use the earned income credit. For example, suppose a retired worker with wife and eligible child received a \$530 monthly Social Security benefit and earned \$4,000 at annual part-time employment. This person could receive the maximum earned income credit yet have a family income in excess of \$10,000.

Second, a subfamily could be eligible to receive the earned income credit even though income of the whole family exceeded \$8,000. For example, a young married couple with eligible dependent children renting living accommodations from a parent could earn less than \$8,000 while total family income exceeded that

Table 5--Estimated distribution of families and earned income credit, by size of money income, residence, and region, 1976

Item	Income (dollars)			Total : number of : families	: Earned : income : credit
	Less than 4,000	Income 4,000-7,999	8,000 and over		
	-----Percent-----			Thousands	Million dollars
<u>Residence</u>					
Metro urban:					
All families	14.9	16.7	68.4	48,207	
Earned income credit:	17.6	56.2	26.2		713
Nonmetro urban:					
All families	20.1	20.3	59.6	10,070	
Earned income credit:	21.5	56.9	21.6		181
Rural nonfarm:					
All families	17.0	18.1	64.9	16,896	
Earned income credit:	17.5	55.7	26.8		360
Rural farm:					
All families	18.5	22.3	59.2	3,117	
Earned income credit:	19.4	58.1	22.5		93
<u>Region</u>					
Northeast:					
All families	15.1	17.1	67.8	18,517	
Earned income credit:	13.6	57.1	29.3		232
North Central:					
All families	15.1	16.1	68.8	21,084	
Earned income credit:	17.3	56.2	26.5		298
South:					
All families	19.2	19.6	61.2	24,101	
Earned income credit:	20.8	55.7	23.5		585
West:					
All families	17.2	17.5	65.3	14,588	
Earned income credit:	17.6	57.2	25.2		232
All areas:					
All families	16.8	17.2	66.0	78,290	
Earned income credit:	18.3	56.3	25.4		1,347

Source: Special tabulations from the Urban Institute's TRIM simulation.

amount. 10/ This analysis did not permit exploration of the extent to which each of these two factors contributed to the apparent leakage.

Income transfer programs are said to be target efficient when the greater benefits go to those with the lowest incomes (1). Thus, the target efficiency of the earned income credit may seem to be low because those families most in need of income support do not appear to receive the bulk of the benefits. However, the result could be misleading if the earned income credit is evaluated outside the context of the entire income transfer system. The earned income credit was not designed to replace the existing income transfer system but to provide some relief for families not covered by other income support programs, with the exception of food stamps, or other tax provisions. And, this analysis did not consider the earned income credit in connection with other income transfer programs or tax provisions.

The bulk (56 percent) of the benefits would accrue to those families earning between \$4,000 and \$8,000 since earnings become a smaller component of family income as family income increases. Also, a fully employed family head will generally earn more than \$4,000 due to Federal minimum wage laws. The potential for leakage of benefits from the earned income credit to families with incomes in excess of \$8,000 may not necessarily imply low target efficiency in context of the tax provision. Undoubtedly, many of these families receive benefits because subfamilies cannot afford to maintain separate households. Thus, the earned income credit may well reach the intended population even though it may not reach the poorest of the poor.

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10/ Tabulations from the March 1974 Current Population Survey show that, in 1974, 1,272,000 primary families contained at least one subfamily. This represented about 2.2 percent of all primary families in the United States. There were 1,349,000 subfamilies, thus, the bulk of multiple families contained only one subfamily. Almost 58 percent of the subfamilies contained a child of the primary head; 42 percent of the subfamilies contained parents, siblings, or some other relative of the primary head. The bulk of subfamilies, 82 percent, were married couples with subfamily heads over 18 years old. The remainder were mostly single persons with a dependent child (Source: Urban Institute).

## References

- (1) Barth, Michael C., George J. Carcagno, and John L. Palmer  
Toward an Effective Income Support System: Problems, Prospects, and Choices. Institute for Research on Poverty, Univ. of Wisconsin-Madison, 1974.
- (2) Bawden, D. Lee  
"Future Poverty Programs--Political Prospects and Implications for the Rural Poor." Unpublished paper presented at a conference on the Poverty Dimension of Rural Underdevelopment in America: New Perspectives, in Gainesville, Fla., Feb. 19-20, 1975.
- (3) Executive Office of the President  
Economic Report of the President. U.S. Gov't. Print. Off., Washington, D.C., 1976.
- (4) Haveman, Robert H.  
"Work Conditioned Subsidies as an Income-Maintenance Strategy: Issues of Program Structure and Integration," Studies in Public Welfare, Paper No. 9 (Part 1). Subcommittee on Fiscal Policy of the Joint Economic Committee, U.S. Congress, Aug. 20, 1973, pp. 33-67.
- (5) Hines, Fred K., and Max Jordan  
Welfare Reform: Benefits and Incentives in Rural Areas. ERS-470. U.S. Dept. Agr., Econ. Res. Serv., June 1971.
- (6) U.S. Bureau of the Census  
"Characteristics of the Population Below the Poverty Level: 1974," Current Population Reports, Series P-60, No. 102, 1976.
- (7) \_\_\_\_\_  
"Money Income in 1974 of Families and Persons in the United States," Current Population Reports, Series P-60, No. 101, 1976.
- (8) U.S. Department of Commerce  
Survey of Current Business. Vol. 55, No. 4, Apr. 1975, pp. 9-11.
- (9) U.S. Department of the Treasury  
Statistics of Income 1973: Individual Income Tax Returns. Internal Revenue Service Preliminary Report, Publ. No. 198, Aug. 1975.

Appendix table 1--Estimated distribution  
of families, by residence and region, 1976

Region	Residence <u>1/</u>				Total
	Urban		Rural		
	Metro	Nonmetro	Nonfarm	Farm	
	urban	urban			
	<u>1,000 families</u>				
Northeast	13,295	1,674	3,366	182	18,517
North Central	12,278	2,927	4,464	1,415	21,084
South	11,855	4,018	7,047	1,181	24,101
West	10,779	1,451	2,019	339	14,588
Total	48,207	10,070	16,896	3,117	78,290

1/ See text table 2, footnote 1, for definition of residence.

Source: Special tabulations from the Urban Institute's TRIM simulator.

Appendix table 2--Estimated reduction in Federal  
income tax revenue as a result of the earned  
income credit, by residence and region, 1976

Region	Residence <u>1/</u>				Total
	Urban		Rural		
	Metro	Nonmetro	Nonfarm	Farm	
	areas	areas			
	<u>Million dollars</u>				
Northeast	163	22	44	3	232
North Central	146	45	73	34	298
South	238	94	204	49	585
West	166	20	39	7	232
Total	713	181	360	93	1,347

1/ See text table 2, footnote 1, for definition of residence.

Source: Special tabulations from the Urban Institute's TRIM simulator.

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Summary

Southern families and, to some extent, farm families appear to be the primary beneficiaries of the earned income tax credit, a refundable tax credit for individuals enacted into law as part of the Tax Reduction Act of 1975. This study analyzes the distribution of benefits from the earned income tax credit using a computer simulation model. It was assumed that the earned income tax credit would be in force for the entire 1976 tax year.

Based on this simulation analysis, families in the South would receive over 43 percent of the benefits from the earned income tax credit, although they constituted only 31 percent of the U.S. population. About 26 percent of all U.S. families resided in rural areas, but they would receive almost 34 percent of the total tax credit benefits. And farm families, constituting about 4 percent of all families, would receive almost 7 percent of the benefits from the earned income tax credit.

Two reasons account for the South's large share of tax credit benefits: (1) a higher proportion of the low-income population resides in the South than in other regions, and (2) the working poor constitute a relatively larger share of the southern low-income population. Southern urbanites also would receive proportionately more from the tax credit than the population distribution would suggest.

Families with incomes under \$4,000 would receive about 18 percent of the earned income credit benefits. About 56 percent would go to families with incomes between \$4,000 and \$8,000. The remainder, slightly over 25 percent, would accrue to families with incomes over \$8,000. Two factors could contribute to the apparent leakage of benefits to families with incomes over \$8,000: substantial nontaxable income and eligible subfamilies living in larger families with a combined income in excess of \$8,000.